

CLAIMS

Sub 5 1. A method for performing electronic transactions, in which a sender of transaction messages is assigned a smart card with an associated unique identity and a private key stored in the card in a protected manner, and in which an associated public key is kept generally available, characterised in that in connection with an electronic transaction under the sender's own control, preferably through his own input of message information, the sender creates a transaction message, which contains information necessary for the transaction, and, in his smart card, provides the created transaction message with his digital signature while using his own private key for subsequent output and transmission of the transaction message.

B 20 2. A method as claimed in claim 1, characterised in that the transaction message contains information on sender, receiver, amount and preferably a transaction serial number.

25 3. A method as claimed in claim 1 characterised in that the transaction message is created off-line, i.e. not connected to the communications network that is used for the subsequent transmission of the transaction message.

4. A method as claimed in claim 3, characterised in that the transaction message is created off-line.

30 5. A method as claimed in claim 1, characterised in that the transaction message is created in the smart card.

35 6. A method as claimed in claim 5, characterised in that the transaction message is created with the aid of software inserted in the smart card in advance and preferably also sender information inserted in the card in advance.

7. A method as claimed in claim 5, character -

is e d in that information required for the transaction mes-
sage is input with the aid of input means arranged on the
smart card, the card preferably being a so-called advanced
smart card.

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8. A method as claimed in claim 1, c h a r a c t e r i s e d
in that information necessary for the transaction message is
input with the aid of a protected card terminal.

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9. A method as claimed in claim 1, c h a r a c t e r i s e d
in that information necessary for the transaction message is
input with the aid of a separate card communication unit, the
latter preferably also being a card activator.

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10. A method as claimed in claim 1, c h a r a c t e r i s e d
in that information necessary for the transaction message is
input with the aid of a telecommunications unit controlled by
the smart card, especially a mobile telecommunications unit
such as a mobile phone.

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11. A method as claimed in claim 1, c h a r a c t e r i s e d in
that the transaction message contains sender information in the
form of at least one of the following pieces of information: a
card number, a cash card number, a charge card number, a credit
card number, an account number, an invoice number and an ID
number.

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12. A method as claimed in claim 1, c h a r a c t e r i s e d
in that the transaction message contains receiver information
in the form of at least one of the following pieces of informa-
tion: a card number, a cash card number, a charge card number,
a credit card number, an account number, an invoice number and
an ID number.

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13. A method as claimed in claim 1, c h a r a c t e r i s e d
in that the signed transaction message is sent to a card or ac-
count administrator regarding the sender or receiver, that the
digital signature of the transaction message is authenticated

by using the public key, which is assigned to the one who is identified as sender by the transmitted transaction message, and that in case of authenticity, the receiver is credited with the transaction amount by a clearing process.

5 14. A method as claimed in claim 13, c h a r a c -
t e r i s e d in that the signed transaction message is
first sent to the receiver, who optionally after his own
checking of the digital signature of the message forwards the
signed transaction message to said card or account administra-
10 tor.

15 15. A method as claimed in claim 1, c h a r a c t e r i s e d
in that the signed transaction message is encrypted by using a
public key belonging to the addressee, to whom the transaction
message is sent, that the encrypted, signed transaction message
is sent to the addressee, that the addressee by using his pri-
vate key decrypts the signed transaction message, that the
digital signature of the transaction message is authenticated
by using the public key which is assigned to the one who is
identified as sender by the transmitted transaction message,
and that the receiver, in case of authenticity, is credited
with the transaction amount by a clearing process.

25 16. A method as claimed in claim 15, c h a r a c -
t e r i s e d in that the addressee is the receiver, that the
receiver, after decryption, sends the signed transaction mes-
sage to a card or account administrator, whereupon said authen-
tication takes place.

30 17. A method as claimed in claim 1, c h a r a c t e r i s e d
in that the signed transaction message is encrypted by using
the sender's public key and is provided with sender information
and is then sent to a card or account administrator, who has
the sender's private key and who preferably has issued the
35 user's smart card, that said administrator decrypts the re-
ceived encrypted message by using said private key, that
authentication of the digital signature of the decrypted trans-
action message takes place by using the public key, which is
assigned to the one who is identified as sender by the trans-

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mitted transaction message, and that the receiver, in case of authenticity, is credited with the transaction amount by a clearing process.

5 18. A method as claimed in claim 1, characterised in that the signed transaction message is sent non-encrypted, especially via a public communications network, such as the Internet or a telecommunications network.

10 19. A method as claimed in claim 1, characterised, in that the signed transaction message is sent by e-mail.

20 20. A method as claimed in any one of claims 1-18, characterised in that the signed transaction message is sent via a mobile telephone network, especially by using a so-called SMS service.

25 21. A smart card for carrying out electronic transactions, comprising means for storing card identification information, means for protected storing of a private key, means for storing an asymmetrical algorithm, means for input of transaction information into the card, processor means for creating in the card a transaction message based on input transaction information, such as information on amount and receiver, and optionally information stored in the card, such as information on sender and preferably a serial number, and for providing the transaction message with a digital signature on the basis of said private key and said asymmetrical algorithm, and means for output of the signed transaction message.

30 22. A card as claimed in claim 21, characterised in that the card is of a so-called advanced type.

35 23. A combination of a smart card and a user-controlled communication unit, which is arranged for communication with the smart card and with which the card is adapted to be combined with a view to producing an electronic transaction message, the card comprising means for protected storing of a private key, means for storing an asymmetrical algorithm and processor

means for providing a created transaction message with a digital signature based on said private key and said algorithm, and said communication unit comprising means for input of transaction information, and means being arranged in the communication unit and/or in the card for creating said transaction message.

24. A combination as claimed in claim 23, characterised in that the communication unit is a mobile telecommunication device.

25. A combination as claimed in claim 23, characterised in that the communication unit is a combined card activator and information inputter/processor.

26. Use of a smart card with a private key stored therein for providing, independently of the communications network, an electronic transaction message provided with a digital signature based on the private key.

27. A method as claimed in claim 2, characterised in that the transaction message is created off-line, i.e. not connected to the communications network that is issued for the subsequent transmission of the transaction message.

28. A method as claimed in claim 6, characterised in that information required for the transaction message is input with the aid of input means arranged on the smart card, the card preferably being a so-called advanced smart card.

29. A method as claimed in claim 27, characterised in that the transaction message is created off-line.